

In the claims:

1-31 (Cancelled)

32. (Currently amended) A Bacillus spore which comprises a promoter and is
2 ~~genetically modified with genetic code comprising~~ at least one genetic construct that is under the
control of the promoter and that encoding encodes a therapeutically active compound and;

4 (i) a targeting signal sequence ~~or~~ for said protein;

(ii) a vegetative cell protein of said Bacillus; or

6 (iii) the rRNA of the rrnO gene;

wherein the spore is suitable for use in oral administration for therapeutic treatment.

33. (Previously presented) A spore as claimed in claim 32, wherein the
2 therapeutically active compound is an antigen or a medicament or a precursor to an antigen or a
medicament.

34. (Previously presented) A spore as claimed in claim 32, wherein the gene
2 construct is a chimeric gene.

35. (Previously presented) A spore as claimed in claim 33, wherein the gene
2 construct is a chimeric gene.

36. (Previously presented) A spore as claimed in claim 32, wherein the genetic
2 modification is accomplished by transformation of a mother cell using a vector containing the
gene construct and then inducing the mother cell to produce the spores.

37. (Currently amended) A spore as claimed in claim 32, wherein the gene construct
2 is under the control of one or more of, each or independently, an inducible promoter, ~~a promoter~~
or a strong promoter or modified promoter.

38. (Cancelled)

2 39. (Previously presented) A spore as claimed in claim 37, wherein the gene
construct has an enhancer element or an upstream activator sequence associated with it.

2 40. (Previously presented) A spore as claimed in claim 32, wherein the construct
comprises an inducible expression system.

2 41. (Previously presented) A spore as claimed in claim 37, wherein the construct
comprises an inducible expression system.

2 42. (Previously presented) A spore as claimed in claim 32, wherein the spore
germinates in the duodenum and/or the jejunum of an intestinal tract of a human or animal body.

2 43. (Previously presented) A spore as claimed in claim 32, wherein the
therapeutically active compound is an antigen which, in use, is adapted to elicit an immune
response.

2 44. (Previously presented) A spore as claimed in claim 43, wherein the antigen is at
least a fragment of tetanus toxin fragment C or labile toxin B sub unit.

2 45. (Previously presented) A spore as claimed in claim 37, wherein the protein is a
protein that is expressed in the cell barrier.

2 46. (Previously presented) A spore as claimed in claim 45, wherein the protein is a
protein that is expressed in the cell barrier.

2 47. (Previously presented) A spore as claimed in claim 37, wherein the protein is
expressed all the time in a vegetative cell.

2 48. (Previously presented) A spore as claimed in claim 47, wherein the protein is
expressed all the time in a vegetative cell.

49. (Currently amended) A spore as claimed in claim 47, wherein the protein is
2 OppA or ~~rrnO~~.

50. (Previously presented) A spore as claimed in claim 32, wherein the protein is
2 expressed intermittently in a vegetative cell.

51. (Previously presented) A spore as claimed in claim 46, wherein the protein is
2 expressed intermittently in a vegetative cell.

52. (Previously presented) A spore as claimed in claim 32, wherein the protein is a
2 soluble cytoplasmic vegetative cell protein.

53. (Previously presented) A spore as claimed in claim 44, wherein the protein is
2 soluble cytoplasmic vegetative cell protein.

54. (Currently amended) A spore as claimed in claim ~~52~~32, wherein the ~~protein~~
2 is spore encodes the rRNA of the rrnO gene.

55. (Cancelled)

56. (Cancelled)

57. (Previously presented) A spore as claimed in claim 32, wherein the signal
2 sequence is adapted to target the therapeutically active compound to a specific part of the vegetative cell.

58. (Previously presented) A spore as claimed in claim 44, wherein the signal
2 sequence is adapted to target the therapeutically active compound to a specific part of the
vegetative cell.

59. (Previously presented) A spore as claimed in claim 57, wherein the signal
2 sequence directs the therapeutically active compound for secretion (preferably active secretion,
more preferably Type I, Type II or Type III secretion), or for post-translational processing by a
4 vegetative cell (preferably glycosylation).

60. (Previously presented) A spore as claimed in claim 32, wherein the
2 therapeutically active compound is an antigen precursor which is one or more enzymes capable
of transforming a biological precursors, such that upon germination said one or more enzymes
4 are expressed and synthesise one or more antigens by transformation of a said biological
precursor.

61. (Previously presented) A spore as claimed in claim 59, wherein the
2 therapeutically active compound is an antigen precursor which is one or more enzymes capable
of transforming a biological precursors, such that upon germination said one or more enzymes
4 are expressed and synthesise one or more antigens by transformation of a said biological
precursor.

62. (Previously presented) A spore as claimed in claim 60, wherein the biological
2 precursor is a hormone, a steroid hormone, a painkiller or a pro-drug.

63. (Previously presented) A spore as claimed in claim 32, wherein the
2 therapeutically active compound is a medicament which is a protein, a vaccine or an endorphin.

64. (Previously presented) A spore as claimed in claim 59, wherein the
2 therapeutically active compound is a medicament which is a protein, a vaccine or an endorphin.

65. (Previously presented) A spore as defined in claim 32, wherein it is for use in

2 treatment of a medical condition, preferably the medical condition is inflammation, pain, a hormonal imbalance and/or an intestinal disorder.

66. (Previously presented) A spore as defined in claim 64, wherein it is for use in
2 treatment of a medical condition, preferably the medical condition is inflammation, pain, a hormonal imbalance and/or an intestinal disorder.

67. (Currently amended) A composition comprising at least two different spores as
2 defined in claim 32, ~~wherein~~wherein said at least two different spores express at least two different therapeutically active compounds.

68. (Previously presented) A composition as defined in claim 67, wherein the
2 composition further comprises a pharmaceutically acceptable excipient or carrier.

69. (Previously presented) A composition comprising a spore as defined in claim 32
2 in association with a pharmaceutically acceptable excipient or carrier.

70. (Previously presented) A composition comprising a spore as defined in claim 65
2 in association with a pharmaceutically acceptable excipient or carrier.

71. (Previously presented) A composition as defined in claim 67 for use in treatment
2 of a medical condition, preferably the medical condition is inflammation, pain, a hormonal imbalance and /or an intestinal disorder.

72. (Previously presented) A composition as defined in claim 68 for use in treatment
2 of a medical condition, preferably the medical condition is inflammation, pain, a hormonal imbalance and/or an intestinal disorder.

73. (Previously presented) A composition as defined in claim 69 for use in treatment
2 of a medical condition, preferably the medical condition is inflammation, pain, a hormonal imbalance and/or and intestinal disorder.

74. (Cancelled)

75. (Previously presented) A method of medical treatment, which method comprises
2 the steps of

- 4 a) administering a spore as defined in claim 32 to a human or animal in need of
medical treatment;
- 6 b) said spore germinating into a vegetative cell in the intestinal tract;
- 8 c) said vegetative cell expressing a therapeutically active compound for use in the
medical treatment.

76. (Previously presented) A method of medical treatment, which method comprises
2 the steps of

- 4 d) administering a spore as defined in claim 65 to a human or animal in need of
medical treatment;
- 6 e) said spore germinating into a vegetative cell in the intestinal tract;
- 8 f) said vegetative cell expressing a therapeutically active compound for use in the
medical treatment.

77. (Previously presented) A method as claimed in claim 75, wherein the spore is
2 administered orally, intra-nasally or rectally.

78. (Previously presented) A method as claimed in claim 76, wherein the spore is
2 administered orally, intra-nasally or rectally.

79. (New) A method as claimed in claim 75, wherein the method is for treating a
2 medical condition selected from the group consisting of inflammation, pain, a hormonal
imbalance and an intestinal disorder.

ELECTION AND SELECTION OF INVENTION SPECIES

The action calls for a restriction and election of species.

Applicant elects Group I, claims 32-73, with traverse. It is submitted that Groups I and III relate to a single general inventive concept. Group III (claims 75-78) is directed to methods of treatment involving the same spores as Group I and the spores represent a linking general inventive concept. As indicated in Example 2 and Figures 8A and 8B, the present application demonstrates that unexpectedly high levels of spores germinate into vegetative cells in the GIT. A single general inventive concept does therefore link the subject matter of Groups I and III because the spores of claim 32, and which are employed in the method of claim 74, do represent a single general inventive concept.

It is submitted that product claims and method of treatment claims are linked by a single general inventive concept and should therefore be considered together.

Claim 74 has been deleted and hence no claims corresponding to Group II identified in the Restriction Requirement are still pending.

Applicant elects Species I, namely compositions with one spore expressing an antigen (independent claim 32). Applicant notes that the Official Action requires the further election of species. However, it appears that some confusion has arisen as to the use of Tetanus Toxin Fragment C (TTFC) in the invention and the Examiner may have been led astray. This is an important point to Applicant.

Applicant would like to point out that Tetanus Toxin Fragment C referred to by claim 34 [sic] is an antigen. The reference probably should be to claim 44. The Official Action indicates at the paragraph bridging pages 2 and 3 that one claimed antigen should be selected and then refers to claims, none of which refer to TTFC. The Official Action then goes on to indicate that one claimed vegetative cell protein or targeting sequence must be picked and then refers to claim 34

[sic] which refers to TTFC. However, TTFC is being used as an antigen and not as a vegetative cell protein or signal sequence.

Selection of Antigen

The Examiner has also required that one claimed antigen (claims 33, 34, and 62-64) and one claimed vegetative cell protein or targeting sequence (from claims 32, 49 (OppA or rrnO)) be selected.

Applicant selects Tetanus Toxin Fragment C as the antigen (claim 44). It is submitted that the Applicant should be able to elect TTFC as their antigen. It is apparent that TTFC and also E. coli labile toxin B are antigens from paragraph [0026] of the present application, as published.

It is further submitted that the Applicant should be able to pick TTFC as the antigen as claims 33, 34 and 62 to 64 referred to in the Official Action do not refer to specific antigens. Claims 33 refer to an antigen *or* a medicament. Claim 34 does not refer to specific antigens, it refers to a chimeric gene. Claims 62 to 64 refer to a range of therapeutically active agents, including compounds such as pain killers and prodrugs which are not antigens.

Thus, to sum up:

- if Applicant has to select one specific antigen he picks Tetanus Toxin Fragment C (claim 44);
- if the Examiner does not allow TTFC to be selected then Applicant picks the option from claim 33 that the therapeutically active compound is an antigen;
- failing that, if that is still an inappropriate election, Applicant picks the situation that the therapeutically active compound is a “vaccine” from claims 63 and 64 out of the claims indicated by the Official Action.

The Examiner is requested to confirm that the Applicant has made an appropriate election in TTFC.

Selection of Vegetative Cell Protein or Targeting Sequence

Applicant elects the use of rrnO (claim 54).

It is pointed out that rrnO actually encodes a rRNA, rather than a protein, and the claims have been amended to reflect that.